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Morning 10/05/19

[This question paper contains 4 printed pages]

Your Roll No. :

Sl. No. of Q. Paper : 2197 IC

Unique Paper Code : 32161601

Name of the Course : **B.Sc. (Hons.) Botany**

Name of the Paper : Plant Metabolism

Semester : VI

Time : 3 Hours

Maximum Marks : 75

Instructions for Candidates :

- Write your Roll No. on the top immediately on receipt of this question paper.
- Question **No. 1** is compulsory. Attempt any **five** questions including question no. 1.
- All** questions carry equal marks.
- Attempt all parts of a questions together.

1. (a) Explain the following (any **five**) : $1 \times 5 = 5$

- Coupled reaction
- Nitrification
- Anaplerotic reaction
- Second messenger
- Triglycerides pigments
- Accessory Pigments

P.T.O.

(b) Fill in the blanks (any **five**) :

1×5=5

- (i) is a metabolic pathway common to both fermentation and aerobic respiration.
- (ii) Isocitrate lyase is located in
- (iii) Glutamate synthase is also known as.....
- (iv) $F_0 F_1$ ATPase was isolated and purified by.....
- (v) Lipids are hydrolysed by the enzyme.....
- (vi) Regulation of enzymes by phosphorylation-dephosphorylation is known as.....

(c) Name/s the followings (any **five**) : 1×5=5

- (i) Enzyme that converts nitrite to ammonia
- (ii) Three phases of Calvin cycle
- (iii) An inhibitor of cytochrome oxidase
- (iv) An essential fatty acid
- (v) Organelles involved in photorespiration
- (vi) Enzyme that catalyzes introduction of double bonds into fatty acids

2. Explain the following (any **three**) :

5×3=15

- (a) Pentose phosphate pathway and its significance.

(b) C_4 cycle and its significance

(c) Amphibolic role of citric acid cycle

(d) Sucrose biosynthesis

(e) Isoenzymes and their significance

3. Differentiate between the following (any **five**) :

3×5=15

- (a) Anabolism and catabolism
- (b) Reductive amination and transamination
- (c) Oxidative phosphorylation and photophosphorylation
- (d) Synthesis and degradation of fatty acids
- (e) Aerobic and anaerobic respiration
- (f) Action and absorption spectrum

4. (a) Give a diagrammatic representation of Citric acid cycle. What is the net gain of ATP in one round of citric acid cycle ? 7

(b) How do oil seeds convert oil into sugars during germination? Explain with the help of schematic diagram. 8

5. (a) Illustrate Z scheme and discuss the role of two photosystems in converting light energy to chemical energy in plants. 7

(b) Discuss symbiotic nitrogen fixation with reference to

(i) nodulation

(ii) role of dinitrogenase and leghaemoglobin

8

6. (a) Explain chemiosmotic mechanism of ATP synthesis. Describe an experimental evidence that support it. 8

(b) Write the role of calcium and phospholipids in signal transduction. 7

OR

What are allosteric enzymes ? Discuss their role in regulation of metabolism.

7. Write explanatory notes (any **three**) : 5×3=15

(a) CAM pathway

(b) Substrate level phosphorylation

(c) Role of acetyl CoA in metabolism

(d) β -oxidation

(e) Cyanide resistant pathway